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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,697	11/29/2001	Gordon Kerr	13261ROUSO2U	2599
626	7590	02/10/2005	EXAMINER	
NORTEL NETWORKS LIMITED P. O. BOX 3511, STATION C OTTAWA, ON K1Y 4H7 CANADA			TRAN, AMY	
			ART UNIT	PAPER NUMBER
			2157	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/995,697

Applicant(s)

KERR ET AL.

Examiner

Amy Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 November 2001.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This action is responsive to the application filed on November 29, 2001. Claims 1-39 are pending examination. Claims 1-39 represent apparatus and method for processing stream data within a node.

#### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1-39 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-34 of copending Application No. 09,995,707. Although the conflicting claims are not identical, they are not patentably distinct from each other because it would have been obvious to one of ordinary skill in the art at time of the invention to specify a stream fabric as a stream queue controller.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-3, 5-20, 22-36, 38-39 are rejected under 35 U.S.C. 102(e) as being anticipated by Richard et al. (hereinafter Richard) US Patent 6,804,698.

As to claim 1, Richard teaches an apparatus for processing data streams comprising:

at least one producer of properly ordered substreams of a data stream (fig 1, column 4 line 65 to column 5 line 24, the SAR engine is read as producer which has functions of segmentation of data stream and reassembly of data stream);

potential consumers of a data stream (fig 1, column 4 lines 55-65, STB unit 201 is read as potential consumer); and

a stream fabric, coupled to the producer and the potential consumers, that operates to receive the substreams from the producer, store the substreams within a stream queue associated with the data stream and output at least a portion of the data within the stream queue to a consumer of the stream queue, the consumer being one of the

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plurality of potential consumers (fig 1, column 4 lines 55-58, column 9 line 59 – column 10 line 35, SAR engine 3 is read as stream fabric which receive substream from SAR engine, store the substreams within buffer memory).

As to claim 2, Richard teaches an apparatus of claim 1, wherein the stream fabric operating to output at least a portion of the data within the stream queue to a consumer of the stream queue comprises reading a consumer attribute for the stream queue to determine an assigned consumer of the stream queue and outputting a portion of the data within the stream queue to the assigned consumer (fig 1, column 4 lines 55-58, SAR engine 3 output portion of data to STB data processing unit 201, STB data processing unit 201 is read as an assigned consumer).

As to claim 3, Richard teaches the apparatus of claim 1, Richard teaches selecting one of the potential consumers as a consumer for the stream queue based upon a predetermined criteria and outputting a portion of data within the stream queue to the selected consumer (column 4 lines 55-58, column 9 lines 35-column 10 lines 63, data portion are sent from memory to STB data processing unit which is read as selected consumer to process).

As to claim 5, Richard teaches the apparatus of claim 1, wherein the predetermined criteria comprise determination of a least burdened potential consumer

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(column 4 lines 55-58, column 9 lines 35-column 10 lines 63, data portion are sent from memory to STB data processing unit which is read as selected consumer to process).

As to claim 6, Richard teaches an apparatus of claim 1, wherein the stream fabric further operates to receive a control signal associated with the stream queue from the consumer of the stream queue (column 7 lines 19-64, SAR engine operates to receive signals associated with the data stream signals SAR engine is read as stream fabric).

As to claim 7, Richard teaches an apparatus of claim 1 and claim 6, wherein the control signal comprises an indication of at least one consumer attribute for the stream queue (column 7 lines 19-64, signal is to indicate the identity of the message of a stream queue from which the cell comes).

As to claim 8, Richard teaches an apparatus of claim 1, claim 6 and claim 7, wherein the consumer attribute comprises the potential consumer that is assigned as the consumer of the stream queue (column 7 line 19-column 8 line 23).

As to claim 9, Richard teaches an apparatus of claim 1, claim 6 and claim 7, wherein the consumer attribute comprises the number of bytes of the data within the stream queue that are to be output to the consumer of the stream queue (column 8 lines 32-52, data cell which is read as consumer attribute has a size of 48 data byte within the stream queue).

As to claim 10, Richard teaches an apparatus of claim 1 and claim 6, wherein the control signal comprises an indication of at least one attribute associated with the producer of the stream queue (column 7 lines 20-64, signal is to indicate the identity of the message from which the cell comes).

As to claim 11, Richard teaches the apparatus of claim 1 and claim 6, wherein the control signal comprises an instruction to copy at least a portion of the data within the stream queue to the consumer of the stream queue (column 7 line 15 – column 8 line 23).

As to claim 12, Richard teaches the apparatus of claim 1 and claim 6, wherein the control signal comprises an instruction to forward at least a portion of the data within the stream queue to the consumer of the stream queue and to subsequently delete the portion of the data within the stream queue (column 7 line 19 column 8 line 23, SAR unit is signaled from the processor to process data cells to forward or to discard data cells).

As to claim 13, Richard teaches the apparatus of claim 1 and claim 6, wherein the control signal comprises an instruction to transfer at least a portion of the data within the stream queue to another stream queue within the stream fabric (column 7 lines 19-64, column 12 lines 3-47, SAR engine operates to receive signals associated with the

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data stream signals SAR engine is read as stream fabric which has flexible buffering system).

As to claim 14, Richard teaches the apparatus of claim 1, wherein the producer is an Input/Output (I/O) element arranged to be coupled to a packet switched network (fig 1, column 4 line 42-column 5 line 6, SAR engine 100 which has functions of segmentation and re-assembly data stream is read as producer is an I/O element).

As to claim 15, Richard teaches the apparatus of claim 14, wherein the I/O element operates to receive a flow of data packets, each of the data packets representing at least one segmented portion of the data stream; to terminate the layer 4 protocol within the received data packets; and to output properly ordered substreams of the data stream to the stream queue associated with the data stream (column 5 lines 47-49, transport layer).

As to claim 16, Richard teaches the apparatus of claim 1, claim 14 and claim 15, wherein the I/O element operating to terminate the layer 4 protocol within the received data packets comprises removing the packet overhead from the received data packets, reordering the data within the received data packets into the proper order if necessary and requesting retransmission of any lost packets if necessary (column 4 line 49 – column 5 line 6, data stream are segmented and cell content information is added to each segment to form a data cell).



As to claim 17, Richard teaches the apparatus of claim 1, wherein the consumer of the stream queue is a processing element (fig 1, column 4 lines 43-65, STB data processing unit 201 which is read as consumer is a processing element).

As to claim 18, Richard teaches the apparatus of claim 1 and claim 17, wherein the consumer of the stream queue is a content processing element that operates to receive the data output from the stream queue, process contents of the data received from the stream queue (fig 1, column 4 lines 43-65, STB data processing unit 201 which is read as consumer is a processing element that process data).

As to claim 19, Richard teaches the apparatus of claim 1, 17 and claim 18, wherein the at least one control signal comprises an instruction to change a consumer attribute of the stream queue such that the consumer of the stream queue is changed to another one of the potential consumers (column 7 line 19 – column 8 line 23).

As to claim 20, Richard teaches the apparatus of claim 1, claim 17, claim 18 and claim 19 wherein the other one of the potential consumers comprises an application processing element that operates to process the contents of the data received from the stream queue (fig 1, column 4 lines 43-65, STB data processing unit 201 which is read as consumer is a processing element that process data).

As to claim 22, Richard teaches the apparatus of claim 1, claim 17, claim 18 and claim 19, wherein the other one of the potential consumers comprises an Input/Output (I/O) element coupled to a packet switched network, the I/O element operating to output the data within the stream queue to the packet switched network (fig 1, column 4 line 42-column 5 line 6, SAR engine 100 which has functions of segmentation and re-assembly data stream is read as producer is an I/O element).

As to claim 23, Richard teaches the apparatus of claim 1, claim 17, claim 18, claim 19 and claim 22, Richard teaches adding a flow context identifier to the stream queue associated with the data stream (column 6 lines 11 – 22, storing context information for the incoming data stream)

As to claim 24, Richard teaches the apparatus of claim 1, claim 17 and claim 18, wherein the stream fabric comprises a plurality of stream queues and the content processing element is set as a default initial consumer of each of the stream queues within the stream fabric (fig 11, column 10 lines 36 – 40, multiple message queues are allocated).

As to claim 25, Richard teaches the apparatus of claim 1, wherein the producer and one of the potential consumers are the same component (column 4 line 61 – column 5 line 6, SAR engine which is read as producer and STB processing unit which is read as consumer are both I/O element).

As to claim 26, Richard teaches an apparatus for processing streams of data comprising:

at least one producer of properly ordered substreams of a data stream (fig 1, column 4 line 65 to column 5 line 24, the SAR engine is read as producer which has functions of segmentation of data stream and reassembly of data stream) ; a content processing element (fig 1, column 4 lines 55-65, STB unit 201 is read as a content processing element); and a stream fabric, coupled to the producer and the content processing element, that operates to receive the substreams from the producer, store the substreams within a stream queue associated with the data stream and copy at least a portion of the data within the stream queue to the content processing element;

wherein the content processing element operates to receive the data output from the stream queue, process contents of the data received from the stream queue and transmit at least one control signal to the stream fabric in response to the processing of the contents of the data (fig 1, column 4 lines 55-58, column 9 line 59 – column 10 line 35, SAR engine 3 is read as stream fabric which receive substream from SAR engine and store the substreams within buffer memory).

As to claim 27, Richard teaches an apparatus of claim 26, Richard further teaches comprising at least one consumer of a data stream; and

wherein the at least one control signal comprises an instruction for the stream fabric to forward further data from the stream queue to the consumer (column 7 line 19 column 8

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line 23, SAR unit is signaled from the processor to process data cells to forward or to discard data cells).

As to claim 28, Richard teaches an apparatus of claim 26 and claim 27, wherein the consumer comprises an application processing element that operates to process the contents of the data received from the stream queue (column 4 lines 55-62, data message is processed into a form suitable for outputting to other equipment, STB data processing unit is read as consumer).

As to claim 29, Richard teaches an apparatus of claim 26 and claim 27, wherein the consumer comprises an Input/Output (I/O) element coupled to a packet switched network, the I/O element operating to output the data within the stream queue to the packet switched network (fig 1, column 4 line 58 - column 5 line 6, STB unit which is read as consumer is an Input/Output element).

As to claim 30, Richard teaches a stream switch for directing, within a packet switched network, a data stream, the stream switch comprising:  
an interface, arranged to be coupled to the packet switched network, that operates to receive and process a flow of data packets from the packet switched network, each of the data packets representing at least one segmented portion of the data stream, and to output properly ordered substreams of the data stream (fig 1, column 4 line 65 to

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column 5 line 24, the SAR engine is read as producer which has functions of segmentation of data stream and reassembly of data stream);

a stream fabric that operates to receive the substreams from the interface and store the substreams within a stream queue associated with the data stream (fig 1, column 4 lines 55-58, column 9 line 59 – column 10 line 35, SAR engine 3 is read as stream fabric which receive substream from SAR engine, store the substreams within buffer memory); and

a content processing element that operates to receive a copy of at least a portion of the data within the stream queue, process contents of the data received from the stream queue and instruct the stream fabric to direct the data within the stream queue to a selected flow of packets within the packet switched network, via the interface, in response to the processing of the contents of the data (fig 1, column 4 lines 55-65, STB data processing unit process data message into a form suitable for outputting to other equipment, STB unit 201 is read as a content processing element).

As to claim 31, Richard teaches an apparatus for processing data streams comprising:

production means for producing properly ordered substreams of a data stream (fig 1, column 4 line 65 to column 5 line 24, the SAR engine is production means for producing substreams of a data stream which has functions of segmentation of data stream and reassembly of data stream);

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a plurality of consumption means for consuming a data stream (fig 1, column 4 lines 55-65, STB unit 201 is consumption means for consuming data stream);

storage means for storing the substreams (column 6 lines 37- 43, storage buffer memory is a storage means for storing substreams); and

output means for outputting at least a portion of the data within the storage means to one of the consumption means (column 5 lines 33-49, SAR engine has output means to transfer data through a bus system to the appropriate external memory).

As to claim 32, Richard teaches a method of processing a data stream comprising:

producing properly ordered substreams of a data stream (fig 1, column 4 line 65 to column 5 line 24, producing segmentation of data stream and reassembly of data stream);

storing the substreams within a stream queue associated with the data stream (column 6 lines 37- 43, storage buffer memory is a storage means for storing substreams within a stream queue); and

outputting at least a portion of the data within the stream queue to a consumer of the stream queue, the consumer being one of a plurality of potential consumers (column 5 lines 33-49, transferring data within stream queue out through a bus system to the appropriate external memory).

As to claim 33, Richard teaches the method of claim 32, wherein the producing properly order substreams of a data stream comprises receiving a flow of data packets, each of the data packets representing at least one segmented portion of the data stream; and terminating the layer 4 protocol within the received data packets (column 5 lines 47-49, transport layer).

As to claim 34, Richard teaches the method of claim 32 and claim 33, wherein the terminating the layer 4 protocol within the received data packets comprises removing the packet overhead from the received data packets, reordering the data within the received data packets into the proper order if necessary and requesting retransmission of any lost packets if necessary (column 4 line 49 – column 5 line 6, data stream are segmented and cell content information is added to each segment to form a data cell).

As to claim 35, Richard teaches the method of claim 32, wherein the outputting at least a portion of the data within the stream queue to a consumer of the stream queue comprises processing contents of at least a portion of the data within the stream queue (column 4 lines 55-58, when re-assembling data cells in SAR engine), determining which of the potential consumers to select as the consumer for the stream queue based upon the contents of the at least a portion of the data within the stream queue and outputting at least a portion of the data within the stream queue to the selected consumer (fig 1, column 4 lines 55-58, SAR engine 3 output portion of data to STB data

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processing unit 201, STB data processing unit 201 is read as an selected consumer which is determined by SAR engine 3).

As to claim 36, Richard teaches an apparatus of claim 32 and claim 35, Richard further teaches processing the data received from the stream queue at the selected consumer of the stream queue (fig 1, column 4 lines 55-65, at the STB data processing unit processing data message into a form suitable for outputting to other equipment, STB unit 201 is read as a selected consumer).

As to claim 38, Richard teaches an apparatus of claim 32, 35 and claim 36, wherein the processing the data received from the stream queue comprises outputting the data received from the stream queue to a packet switched network (column 5 lines 33-49, transferring data cells out through a bus network to the appropriate external memory).

As to claim 39, Richard teaches a method of processing a data stream comprising:  
producing properly ordered substreams of a data stream (fig 1, column 4 line 65 to column 5 line 24, producing segmentation of data stream and reassembly of data stream);



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storing the substreams within a stream queue associated with the data stream (column 6 lines 37- 43, storage buffer memory is a storage means for storing substreams within a stream queue);

processing contents within at least a portion of the data within the stream queue to determine one of a plurality of potential consumers to select as a consumer of the stream queue (column 4 lines 55-58, when re-assembling data cells in SAR engine before they are sent to STB data processing unit which is read as a potential consumer); and

outputting at least a portion of the data within the stream queue to the selected consumer of the stream queue (fig 1, column 4 lines 55-58, SAR engine 3 output portion of data to STB data processing unit 201, STB data processing unit 201 is read as a selected consumer).

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 21, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richard US Patent 6,804,698 in view of Burrows US Patent 5,303,302.

As to claim 21, Richard teaches the apparatus of claim 1, claim 17, claim 18, claim 19 and claim 20, Richard teaches application processing element (fig 1, column 4

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lines 43-65, STB data processing unit 201 which is read as consumer is a processing element that process data), Richard doesn't teach decryption. However, Burrows teaches a network controller receives encrypted data packets in the form of interleaved streams of cells, and stores the received cells in a buffer until the end of each packet is received, at which time the complete packet is decrypted, error checked (see abstract). Burrow does teach decryption processing element that operates to decrypt the data received from the stream queue (column 7 line 18 – column 8 line 45).

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Richard by having a decryption processing element as the teaching of Burrows since doing so would allow avoiding data buffer overflow.

As to claim 37, Richard teaches the apparatus of claim 32, claim 35 and claim 36 Richard teaches processing data received from a stream queue (fig 1, column 4 line 43-column 5 line 6, STB data processing unit 201 which is read as consumer is a processing element that process data), Richard doesn't teach "decryption". However, Burrows teaches a network controller receives encrypted data packets in the form of interleaved streams of cells, and stores the received cells in a buffer until the end of each packet is received, at which time the complete packet is decrypted, error checked (see abstract). Burrow does teach decryption processing element that operates to decrypt the data received from the stream queue (column 7 line 18 – column 8 line 45).

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It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Richard by having a decryption processing element as the teaching of Burrows since doing so would allow avoiding data buffer overflow.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richard US Patent 6,804,698 in view of Bee, Jr. et al. (hereinafter Bell, Jr) US Patent 6,606,666.

As to claim 4, Richard teaches the apparatus of claim 1 and claim 3, Richard fail to teach "round robin system". However, Bell, Jr teaches method and system for controlling information flow between a producer and a buffer in a high frequency digital system (see abstract). Richard does teach round robin system (column 8 lines 17-62)

It would have been obvious for one of ordinary skill in the art at the time of the invention to modify Richard by using round robin in data stream queue transferring since. One is motivated to do so because it provides good proportional sharing accuracy and it is simple to implement.

### **Contact Information**

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy Tran whose telephone number is (571) 272-4243. The examiner can normally be reached on M-F from 8:30am to 5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571) 272-4001. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

at

2/7/05

  
SALEH NAJJAR  
PRIMARY EXAMINER